

REMARKS

Claims 1–26 are pending in the application. No claims are being amended with this response.

35 USC 102(b): Claims 1 and 14

Claims 1–8, 12–20, 23–26 are rejected under 35 USC 102(b) as being anticipated by US 6,557,492 (Robohm). In rejecting Claim 1, the Examiner states “Robohm teaches an apparatus for storing aquatic animals, comprising a tank (205) for receipt of the aquatic animals and an arrangement to create a foam environment (create [sic] by oxygen delivery system (300)) in the interior of the tank and configured such that at least a majority of the aquatic animals when stored in the tank are submerged in foam”. The rejection fails to raise a *prima facie* case of unpatentability because it is not based on substantial evidence.

The Applicant’s claimed apparatus as set forth in Claims 1 and 14 includes an arrangement to create a foam environment in the interior of a tank for storing aquatic animals. The claimed foam-creating arrangement is configured such that **at least a majority of the aquatic animals that are stored in the tank are submerged in foam**. The term “foam” is defined on page 2, lines 14 and 15 of the specification to be a suspension of gas bubbles in a liquid.

Robohm does not teach or suggest the Applicant’s claimed combination of features. Robohm describes a device that is designed to maintain animals in a liquid medium. To the extent that oxygen gas is introduced into the liquid, the oxygen is dissolved in the liquid. The Robohm system is designed to intentionally distribute very small oxygen bubbles into the water, so they are readily dissolved. The Examiner is directed to the text at column 13, lines 36–45, of Robohm where it is stated:

In the preferred embodiment, the oxygen diffusers are silica micro-pore oxygen diffusers capable of distributing the very small pure oxygen bubbles into the water column of the tote. The small bubbles results [sic] in a high transfer efficiency of oxygen gas to dissolve the oxygen in the tote water. Micro-pore silica oxygen diffusers are most preferred because they are inexpensive, have very efficient oxygen transfer, and create very small bubbles that do not disturb or excite the fish.

The quoted text makes it clear that the oxygen diffusers used in the device described in the Robohm patent distribute very small bubbles in water such that the oxygen will either fully dissolve or migrate and float. The result is that in the Robohm system, the fish are stored in a medium that is predominantly liquid water.

As set forth in Claims 1 and 14 of the present application, the Applicant's claimed apparatus is configured to create a foam environment in the tank such that the majority of the aquatic animals when stored in the tank are submerged in the foam. That is, the majority of the aquatic animals are stored in a mass of bubbles of air or gas in a matrix of liquid film, which translates to the majority of the animals being suspended primarily in gas. In contrast, in the apparatus described in the Robohm patent, the fish are stored in a liquid with very little, if any, undissolved gas. By submerging at least a majority of the aquatic animals in foam, the Applicants' claimed apparatus protects the animals during storage and/or transport. As outlined on pages 17 onwards in the present application, the benefits of foam storage provided by the Applicants' claimed apparatus include reduced water usage, consistent shellfish condition, improved processability, improved organoleptic quality, and improved yield (including reduced mortality rates).

As described in the background section of the present application, conventional shellfish storage devices that utilize dry systems, submerged systems, or spray arrangements, adversely affect the quality of the shellfish and reduce the weight and eating quality of the shellfish. The Robohm system is a 'submerged' system, in which the fish are fully submerged in a liquid. To the best of Applicants' knowledge, the Applicants are the first to discover the concept of foam-based aquatic animal storage and to develop a foam-based storage system for aquatic animals.

The differences between the Robohm system and the Applicants' claimed apparatus can also be seen from the differences in the types of aquatic animals that the two systems are designed to be used with. As described in Robohm at lines 18–23 of column 7, the Robohm system is suitable for use with fin fish. That is because the Robohm system submerges the fish in

liquid. In contrast, the Applicants' claimed apparatus is not suitable for fin fish, but is more specifically useful for shellfish, and particularly bi-valve shellfish such as mussels, for example.

Claim 14 is an independent claim. The Applicants' claimed apparatus as set forth in Claim 14 includes

a fluid recirculation arrangement which is configured to recirculate fluid from a lower region of the interior of the tank in which the aquatic animals are stored to a higher region of the interior of the tank, such that the fluid passes over at least a majority of the aquatic animals when stored in the tank and the natural proteins of the aquatic animals create a foam as the fluid is recirculated, such that at least a majority of the aquatic animals when stored in the tank are submerged in foam.

In making the rejection with reference to Claim 14, the Examiner asserted that "Robohm teaches the arrangement to create a foam environment (create [sic] by oxygen delivery system (300)) in the interior of the tank (205) comprises a fluid recirculation arrangement which is configured to recirculate fluid from a lower region of the interior of the tank in which the aquatic animals are to be stored to a higher region of the interior of the tank, such that the fluid passes over at least a majority of the aquatic animals being stored in the tank and the natural proteins of the aquatic animals create a foam as the fluid is recirculated (see lines 58–67 of column 5)."

However, the Applicants submit that Robohm does not teach the claimed features. The paragraph referred to by the Examiner describes that the Robohm system may have a water treatment and delivery apparatus that removes water from a plurality of tanks and returns the water to the same tanks, and which includes an ammonia remover, a temperature controller, a water reservoir, a carbon dioxide remover, a waste dispenser, a suction system and a circulation pump. Further, as is described at column 17, lines 45 onwards of Robohm, and with reference to Figure 11, the water is removed from an upper region of the tank through lines 472, 475, is cleaned, and is returned to a lower region of the tank through lines 460, 470. Oxygen is fed by gravity through the supply line 460 through hoses 470 to the base of the tank. Therefore, the arrangement described in Robohm is not at all like the Applicants' claimed apparatus as set forth

in Claim 14. Accordingly, the Applicants' claimed apparatus as set forth in Claim 14 is not anticipated by Robohm.

Claims 2-8, 12, 13, 15-20, and 23-26 depend from Claim 1 either directly or indirectly and thus, are not anticipated by Robohm for at least the same reasons as Claim 1.

For all of the foregoing reasons, the Applicants believe that Robohm neither anticipates nor renders obvious Claims 1-8, 12-20, or 23-26 of the present application. The rejection based on Robohm fails to raise a *prima facie* case of unpatentability because it is not based on substantial evidence of lack of novelty. Therefore, the rejection is improper and should be withdrawn.

35 USC 103(a): Claims 11, 21, and 22

The Examiner rejected Claims 11, 21, and 22 under 35 USC 103(a) as being unpatentable over Robohm. Claims 11, 21, and 22 depend from Claim 1 either directly or indirectly and thus, they include the feature that the aquatic animals are stored in foam, which as discussed above relative to Claims 1 and 14 is neither described nor suggested by Robohm. Therefore, it is believed that Robohm fails to raise a *prima facie* case of unpatentability relative to Claims 11, 21, and 22 for at least the same reasons discussed above relative to Claims 1 and 14. Therefore, the rejection is improper and should be withdrawn.

It is further noted that in making this rejection the Examiner conceded that Robohm does not describe the additional features set forth in Claims 11, 21, and 22 relative to Claim 1. The Examiner did not cite any additional patents or publications that would suggest the desirability of including the claimed features of the Applicants' claimed apparatus as set forth in Claim 11 or of including the claimed steps of the Applicants' claimed method as set forth in Claims 21 and 22. Instead the Examiner relied on Official Notice to establish the conclusion of obviousness in connection with Claims 11 and 22. With respect to Claim 21, the Examiner concludes that the

claimed step would have been obvious without any explanation of why the claimed step is suggested by the prior art.

Reliance on Official Notice of undocumented facts is proper only “where the facts asserted to be well known are capable of instant and unquestionable demonstration as being well-known.” MPEP 2144.03. The combination of features of the Applicants’ claimed apparatus is not shown or suggested in Robohm. If the use of refrigerated or humidified gas in the apparatus described in Robohm was so notorious, one would reasonably expect that Robohm would contain some reference to that fact. However, there is no mention of the use of such material in Robohm. Accordingly, the Applicants believe that the Examiner’s assertion of Official Notice of facts is not proper. Therefore, it is requested that the Examiner cite a reference or references to show that it would have been obvious to modify the apparatus described in Robohm to have all the features of the Applicants’ claimed apparatus as set forth in Claim 11 or all of the steps set forth in the Applicants’ claimed method as set forth in Claims 21 and 22. In the absence of such documents, the rejection of Claims 11, 21, and 22 is not based on substantial evidence and thus, is improper.

35 USC 103(a): Claims 9 and 10

Claims 9 and 10 were rejected under 35 USC 103(a) as being unpatentable over Robohm in view of US 6,382,601 (Ohnari). In making the rejection, the Examiner concedes that Robohm does not disclose all of the features set forth in Claims 9 and 10. However, the Examiner concludes that Ohnari describes the features missing from Robohm and suggests that it would have been obvious to modify the apparatus described in Robohm to include the additional features of Claims 9 and 10.

Ohnari discloses a micro-bubble generating system with a conical container 100, a pressure liquid inlet 500 that is tangential to the container wall, a gas-introducing hole 80, and a swirling gas/liquid outlet 101. By forcing the pressurized liquid into the conical space 100, a swirling flow is created, and a negative pressure is formed in the centre of the container creating

a gas cavity 60. Liquid and gas become separable and the gas is ejected through the outlet. Micro-bubbles (bubbles having a diameter of 10–20 μm) are formed near to and injected through, the outlet.

Among the stated uses of the system described in Ohnari is purification of water in ponds for the culturing of fish. In column 8 thereof, Ohnari describes the formation of a layer of micro-bubbles of about 1cm thick **on the surface of water**, in a water tank having a volume of 5 cubic meters. A tank with such a volume would typically have a depth significantly greater than the 1cm depth of the layer of bubbles on the surface. Accordingly, if aquatic animals were stored in that type of tank, the majority of the aquatic animals would not be submerged in foam. Rather, they would be submerged in water in the same way as conventional submerged-in-water systems, and the Robohm system in particular.

Claims 9 and 10 depend from Claim 1 and thus, include all of the features of the Applicants' claimed apparatus, including the arrangement to create a foam environment in the tank such that the majority of aquatic animals stored or carried in the tank are submerged in foam. As discussed above relative to Claims 1 and 14, Robohm does not teach or suggest a system in which the majority of aquatic animals are submerged in foam. For the reasons discussed in the immediately preceding paragraph, Ohnari also does not teach or suggest a system in which the majority of aquatic animals are submerged in foam. Both the Ohnari and Robohm systems use very small bubbles to increase the dissolution of oxygen in water. The result of those types of systems is that the oxygen would either be fully dissolved in the water, or any undissolved oxygen would float to the surface of the water. In neither system would the majority of aquatic animals be submerged in foam as called for in Claims 9 and 10.

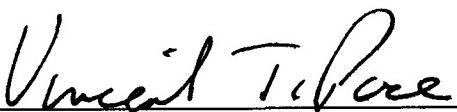
For all of the foregoing reasons, the proposed combination of Robohm and Ohnari fails to raise a *prima facie* case of unpatentability relative to Claims 9 and 10. Therefore, the rejection is improper and should be withdrawn.

CONCLUSION

None of the references cited in the Official Action, considered alone or in combination, raises a *prima facie* case of unpatentability of any of the claims pending in this application. Therefore, the claims as currently presented are in condition for allowance. The Applicants respectfully request that the Examiner reconsider the rejections set forth in the Official Action in the light of the foregoing remarks and distinctions.

Respectfully submitted,

DANN, DORFMAN, HERRELL AND SKILLMAN, P.C.
Attorneys for Applicant(s)


Vincent T. Pace
Vincent T. Pace
PTO Registration No. 31,049

Tel: 215-563-4100
Fax: 215-563-4044
Email: vpace@ddhs.com